163637

SAMPLING PLAN
LAYTON LANDFILL SITE

Prepared by:
Joseph B. Carter
Joseph M. Demmler
November 20, 1989
Region III - Technical Assistance Team
TDD# 8910-07 PCS# 2690
WESTON/MP Division
Wheeling, West Virginia

For
Jack Downie, Sr. OSC
Marjorie Easton, OSC
U.S. EPA, Region III
Western Response Section
Wheeling, West Virginia

SAMPLING PLAN

1. PROJECT NAME: Layton Landfill Site, PCS# 2780 TDD# 8910-63

2. PROJECT REQUESTED BY: Jack Downie, Sr. OSC, U.S. EPA

3. DATE REQUESTED: October 1, 1989

4. DATE OF PROJECT INITIATION: October 6, 1989

5. PROJECT OFFICER: Joseph B. Carter, TAT, Region III

6. QUALITY ASSURANCE OFFICER: Bhupi Khona, TAT, Region III

7. PROJECT DESCRIPTION:

A. BACKGROUND: The Layton Landfill Site is located on a 168-acre parcel of land in Layton, Fayette County, Pennsylvania. The site is approximately 1500 feet west of the town of Layton. The property was the site of a fire clay operation which produced bricks and sewer pipes from the 1800's through 1969. From 1983 to 1986, a portion of the property was leased to Amos Rager who used the property for a scrap metal salvaging yard, where he reclaimed copper from transformers and aluminum and iron from copier parts. Reportedly, Mr. Rager purchased transformers from Duquesne Light Company, dismantled them and then reclaimed the copper by burning it out; further, reclamation of aluminum and iron from copier parts was completed by burning the rubber and plastic parts obtained from Xerox, Inc. The areas in which the burning took place have been referred to as "burn areas" by EPA's Pre-Remedial Section. The same terminology will be used throughout this report to mantain consistency when discussing the site inspection conducted under Pre-Remedial, and the preliminary assessment to be performed under the Removal Section.

The EPA Pre-Remedial Section conducted a site inspection on April 5, 1988. Sample results showed the following elevated concentrations of PCBs and metals in the soil: PCBs (Aroclor-1260) up to 0.27%; antimony, up to 1,100 mg/kg; cadmium, up to 163 mg/kg; copper, up to 31,100 mg/kg; lead, up to 29,100 mg/kg; and zinc, up to 21,900 mg/kg. In addition, it should be noted that the burning of PCBs contained in transformers during Mr. Rager's reclamation process may have resulted in the formation of potentially toxic polychlorinated dibenzodioxins and dibenzofurans. The analytical protocol for the samples collected during the April 5, 1988 investigation had a minimum detection limit of about 300 ug/kg for polychlorinated dibenzodioxins and dibenzofurans.

The April 5, 1988 investigation also revealed trace to low levels of some organic solvents, chlorinated aromatics

including hexachlorobenzene, and plasticizing agent bis(2-ethylhexyl) phthalate.

The site consists of the following six areas of major concern:

AREA 1: Located along the western side of the site is approximately one-acre in size. The area consists of a large, abandoned, brick manufacturing building and a brick lined area to the east of the building, the former location of the fire clay kilns. Copier parts are located both inside and to the east of the building. An oil stained area is located inside the structure. Copier parts are located east and north of the building. Five empty transformers are located north of the brick lined area and a small scrap metal pile is located south of the building. This area is bordered on the south by a railroad track and a small pond.

AREA 2: Located along the eastern side of the site is bordered by an abandoned building to the north and an abandoned shed to the southeast. The dimensions are approximately 60 yards northeast to southeast by 25 yards northwest to southwest. Copier parts, drums containing burned copier parts and transformers are present in this area. A burn pile is located along the dirt access road and a pond is located approximately 15 yards southeast and downslope of this area.

AREA 3: Located along the eastern side of the site is bordered by a house and an empty tank to the north. This area lies approximately 15 yards northeast of AREA 2. The dimensions are approximately 80 yards northeast to southeast by 20 yards northwest to southwest. Copier parts, drums containing burned copier parts and transformers are present in this area. A burn pile is located along the dirt access road and a pond is located approximately 15 yards southeast and downslope of this area.

AREA 4: Located along the eastern side of the site is approximately 30 yards northeast of AREA 3. The dimensions are approximately 30 yards northeast to southeast by 30 yards northwest to southwest. Copier parts, drums containing burned copier parts and transformers are present in this area. A pond is located approximately 15 yards southeast and downslope of this area.

AREA 5: Burned area located along the northwestern side of the site is bordered by the former clay strip mining area on the eastern and northwestern sides. The dimensions are approximately 20 yards north to south by 40 yards east to west. A small marsh lies approximately 30 yards southwest of the area and a power line lies approximately 100 yards west of the area.

AREA 6: Burned area located along the northwestern side of the site is approximately 150 yards north AREA 5. The dimensions are approximately 15 yards north to south by 30 yards east to west.

B. OBJECTIVE AND SCOPE: The planned sampling will be performed to both confirm the presence of PCB,s and priority pollutant metals in the soils and pond sediments as reported during the April 5, 1988 NUS sampling as well as supplement the data collected on that date. TAT will target surface migration pathways for sampling to determine spread of contamination. In addition, the well of Robert Acklin who resides near the site will again be sampled for Priority Pollutants, metals, PCB/Pesticides, and VOA analysis. It has been nearly 19 months since the well was sampled by NUS.

C. DATA USAGE: The purpose of collecting this data is threefold: first, to determine the degree of contamination at the site with respect to the potential hazards to public health, welfare and the environment; second, to determine if any off-site migration of the contaminants has occurred; and third, to determine if removal actions are warranted to mitigate existing threats. It is anticipated that a data summary will be sent to ATSDR for their review and health consultation.

D. SAMPLING PROCEDURE:

1. Approximately 16 soil samples along with two (1) extra volume sample for QA/QC and one (1) background will be collected. Zero to two inch samples will be collected as the objective is to determine direct contact threat and any secondary threat due to probability of contaminated soil being released into the air. Samples will be obtained with a clean, stainless steel scoop and in a random fashion from each area. Sample locations have been predesignated on the attached map. The following areas will be addressed:

Area 1	2 samples
Area 2	2 samples
Area 3	3 samples; 1 for Dioxin screen analysis*; 1 extra volume
Area 4	3 samples;
Area 5	2 samples
Area 6	2 samples
Background	1 sample upgradient

* Dioxin sample will be obtained the following week to allow for laboratory arrangements to be finalized.

The samples will be placed in 8 oz. glass sample jars with teflon liners. The dioxin sample will be placed in a 16 oz. glass jar. All of the above samples, excluding the dioxin sample will be analyzed for PCB/Pesticides and Priority

Pollutant Metals. The extra volume sample is for QA/QC.

2. Three (3) pond sediment samples including one (1) duplicate will be taken from the two ponds indicated on the map. The 8 oz. glass jars will be used to obtain the samples from the ponds. Each sample will be decanted of water to maximize sediment volume. The pond sediment samples will be analyzed for PCB/Pesticides and P.P. Metals.

3. The well sample will consist of the following:

Five 32 oz. ambers for BNA
Five 32 oz. ambers for PCB/Pesticides
Two one liter polys (pH=2) for metals
Four 40 ml VOA's for volatile organics

All of the above samples will be preserved under ice and the dioxin sample will be wrapped in foil to block out light.

4. Prior to sampling activities one (1) 8 oz. hexane rinsate and one 8 oz. distilled water rinsate will be obtained from the stainless steel scoops for QA/QC. In addition, a separate water/methanol rinse and hexane rinse will be obtained from sampling scoops prior to sampling for dioxin.

5. Photo documentation, log books, lab reports and chain of custody records will be handled as per TAT and EPA policy.

E. SAMPLE PACKAGING:

All samples in glass jars will be tagged with a signed chain of custody seal and placed in metal cans packed with vermiculite. The cans will be lidded and placed in coolers also packed with vermiculite and ice. The coolers will be properly placarded and binded with tape to prevent loss of contents.

F. ANALYSIS:

The soil and pond sediment samples will be analyzed for PCB/Pesticides and P.P. Metals. The well samples will be analyzed for BNA, PCB/Pesticides, metals, and VOA. The dioxin sample will undergo 2,3,7,8, TCDD screen analysis.

G. QUALITY ASSURANCE AND QUALITY CONTROL:

SOIL:
1. Two matrix spike analyses on two separate samples
2. Two matrix spike duplicate analyses on two separate samples
3. 1 Hexane rinse
4. 1 Water rinse

POND SEDIMENT:
1. Two matrix spike analyses on one sample
2. Two matrix spike duplicate analyses on one sample

DIOXIN:
1. Four matrix spikes
2. Water/methanol rinse
3. Hexane rinse

EQUIPMENT:
- stainless steel scoops
- 24 8 oz. jars
- 10 32 oz. ambers
- 2 1 liter polys
- 4 40 ml VOA
- hexane
- distilled water

⊗ SAMPLE LOCATION

- LAYTON LANDFILL ASSESSMENT -

PROPOSED TAT SAMPLING PLAN

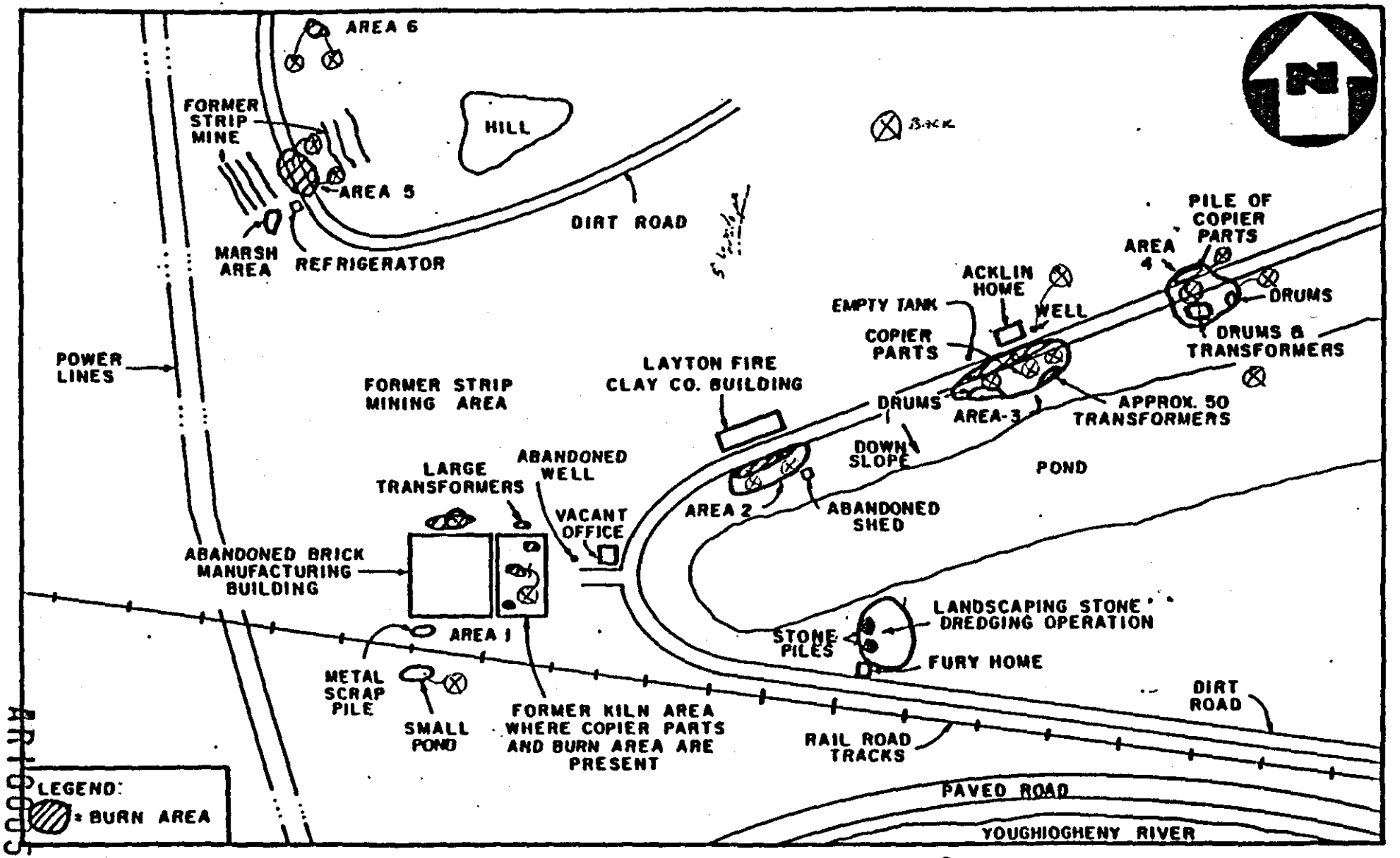

FIGURE - 2

SITE SKETCH

LAYTON LANDFILL, LAYTON, PA.

(NO SCALE)

NUS CORPORATION

- LAYTON LANDFILL ASSESSMENT -

PROPOSED TAT SAMPLING PLAN

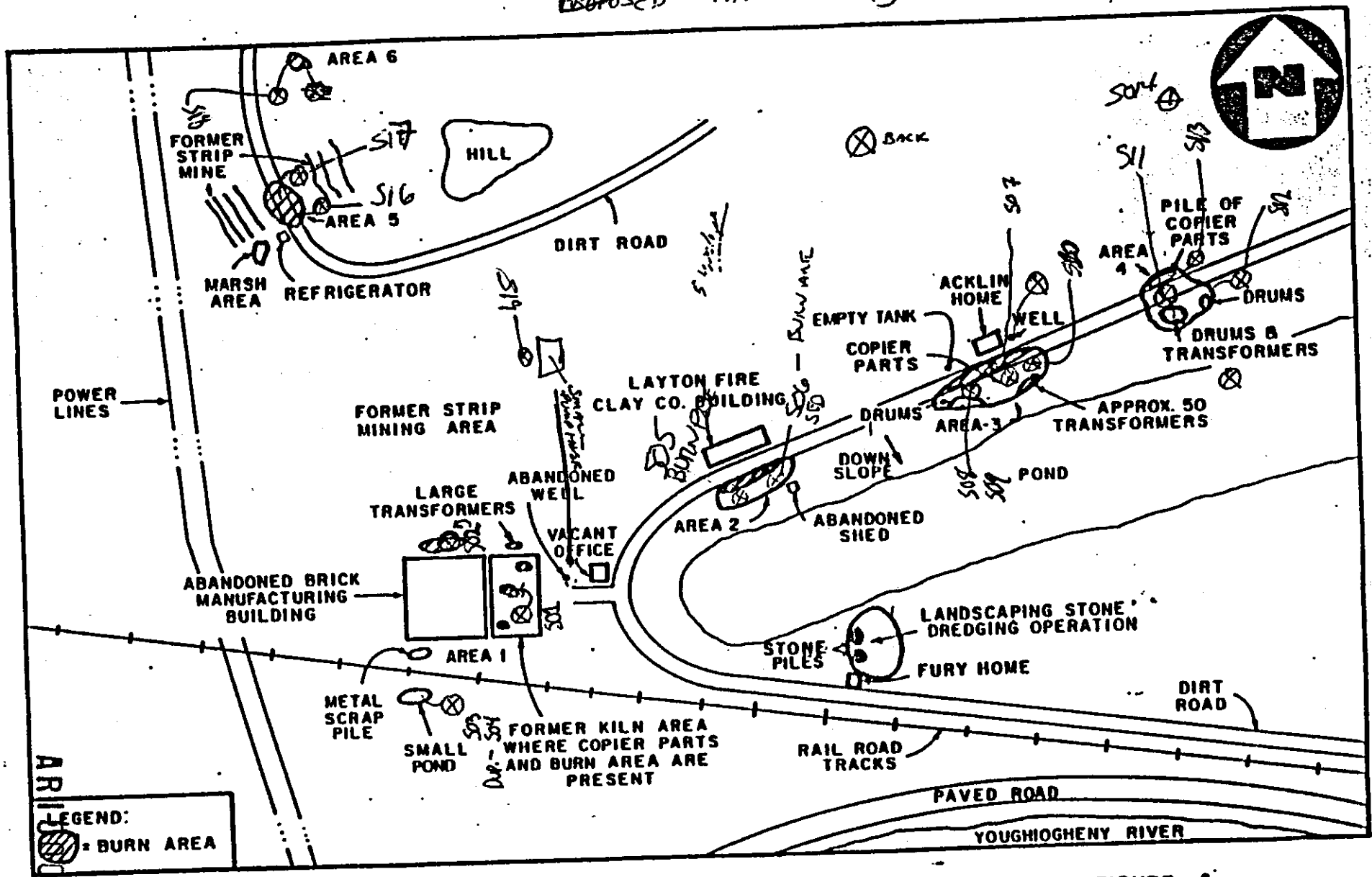

FIGURE - 2

SITE SKETCH

LAYTON LANDFILL, LAYTON, PA.

(NO SCALE)

NUS CORPORATION

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT _____ W.O. NO. _____

TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____ | APPROVED BY

MATH CHECK BY _____ DEPT _____ DATE _____ | _____

METHOD REV. BY _____ DEPT _____ DATE _____ | DEPT _____ DATE _____

0955 S01 OIL SATURATED DIRT IN BRICK MANUFACTURING BUILDING AREA 1

1000 S02 BURN AREA BEHIND BRICK MANUF. BLDG.

1008 S03 SLUDGE FROM SMALL POND

1012 S04 DUP. OF S03.

1023 S05 BURN PILE IN AREA 2.

1026 S06 BURN AREA UP ROAD FROM PILE IN AREA 2

1036 S07 AREA 1 BURN PILE IN FRONT OF ACKLEN HOME.

1040 S08 " BURN PILE DOWN ROAD FROM S07 BURN PILE.

1044 S09 " DUP. OF S08.

1045 S10 " SOIL FROM 3RD BURN PILE IN FRONT OF ACKLEN HOME 8" DEEP.

1055 WELL WASH SAMPLE TAKEN.

1115 S11 AREA 4 COPPER PARTS IN CENTER OF AREA 4.

1120 S12 " SOIL FROM AREA CONTAINED TRANSFORMER PARTS

1125 S13 " COPPER PART PILE.

1130 S14 BACKGROUND ≈ 100 FT ABOVE AREA 4

1145 S15 SEDIMENT SAMPLE FROM ~~POND SCOOP~~

1231 S16 BURN PILE IN AREA 5

1240 S17 FAR END OF AREA 5

1245 S18 AREA 6

1315 S19 AREA 1 — BURN AREA NEAR SMALL PUMP HOUSE.

AR100056

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO. | PROJECT NAME: LAYTON LANDFILL

SAMPLERS: (Signature) Joseph B. Carter, J.M. Dunn

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	8270 TEFLON LID						REMARKS
S01	11/20/87	0955		✓	SOIL IN BUILDING - AREA 1	1	✓						PLEASE REFER TO PURCHASE ORDER
S02	11/21/87	1000		✓	BURN AREA NORTH - AREA 1	1	✓						FOR ANALYSIS TO BE PERFORMED.
S03	11/21/87	1008		✓	POND SEDIMENT AREA 1	1	✓						REMIT RESULTS TO:
S04	11/21/87	1012		✓	EXTRA S03 FOR LAB QA/QC	1	✓						JOSEPH CARTER, 1025 MAIN ST, SUITE
S05	11/21/87	1023		✓	BURN AREA WEST - AREA 2	1	✓						436 HAWLEY BLDG., WHEELING, WV
S06	11/21/87	1026		✓	BURN AREA EAST - AREA 2	1	✓						26003.
S07	11/21/87	1036		✓	BURN AREA MID - AREA 3	1	✓						ALSO A COPY TO:
S08	11/21/87	1040		✓	BURN AREA EAST - AREA 3	1	✓						BHUPI KHONA, 53 HADDONFIELD RD.,
S09	11/21/87	1044		✓	EXTRA S08 FOR LAB QA/QC	1	✓						SUITE 306, CHERRY HILL, NJ 08002
S10	11/21/87	1045		✓	BURN AREA WEST - AREA 3	1	✓						
R20	11/20/87	2000	✓		HEXANE RINSATE	1	✓						

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Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Joseph B. Carter, J.M. Dunn	11/21/87 1800, 11/21/87 2100				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3- 4231

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

100057

PROJ. NO.:

PROJECT NAME: LAYTON LANDFILL

SAMPLERS: (Signature) Joseph B. Carter, J.M. Daniel

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	8oz TEFLON LID	REMARKS
S11	11/21/89	1115		✓	COPIER PARTS AREA 4, WEST	1	✓	PLEASE REFER TO PURCHASE ORDER
S12	11/21/89	1120		✓	TRANSFORMER PARTS AREA 4 EAST	1	✓	FOR ANALYSIS TO BE PERFORMED.
S13	11/21/89	1125		✓	COPIER PART PILE AREA 4 NORTH	1	✓	REMIT RESULTS TO:
S14	11/21/89	1130		✓	BACKGROUND SOIL	1	✓	JOSEPH CARTER, 1025 MAIN ST,
S15	11/21/89	1145		✓	LARGE POND SEDIMENT	1	✓	SUITE 436 HALLEY BLDG., WHEELING,
S16	11/21/89	1235		✓	BURN PILE AREA 5 SOUTH	1	✓	WV 26003
S17	11/21/89	1240		✓	BURN PILE AREA 5 NORTH	1	✓	AND A COPY TO:
S18	11/21/89	1245		✓	BURN PILE AREA 6	1	✓	BHUPI KHONA, 53 HADDONFIELD RD.,
S19	11/21/89	1315		✓	BURN AREA, PUMP HOUSE	1	✓	SUITE 306, CHERRY HILL, NJ 08002
R21	11/20/89	2000	✓		DISTILLED WATER RINSATE	1	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Joseph B. Carter, J.M. Daniel	11/21/89 1700 11/21/89 1800				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3- 4336

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.

PROJECT NAME: LAYTON LANDFILL

SAMPLERS: (Signature) Joseph B. Carter

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	40ML VOA	1 LITER POLY	32 oz AMBER				REMARKS
W1	11/21/89	1055		✓	ACKLIN WELL	16	4	2	10				PLEASE REFER TO PURCHASE ORDER FOR ANALYSIS TO BE PERFORMED. REMIT RESULTS TO: JOSEPH CARTER, 1025 MAIN ST, SUITE 436 HANLEY BLDG., WHEELING, WV 26003 AND A COPY TO: BHUPI KHONA, 53 HADDONFIELD RD., SUITE 206, CHERRY HILL, NJ 08002

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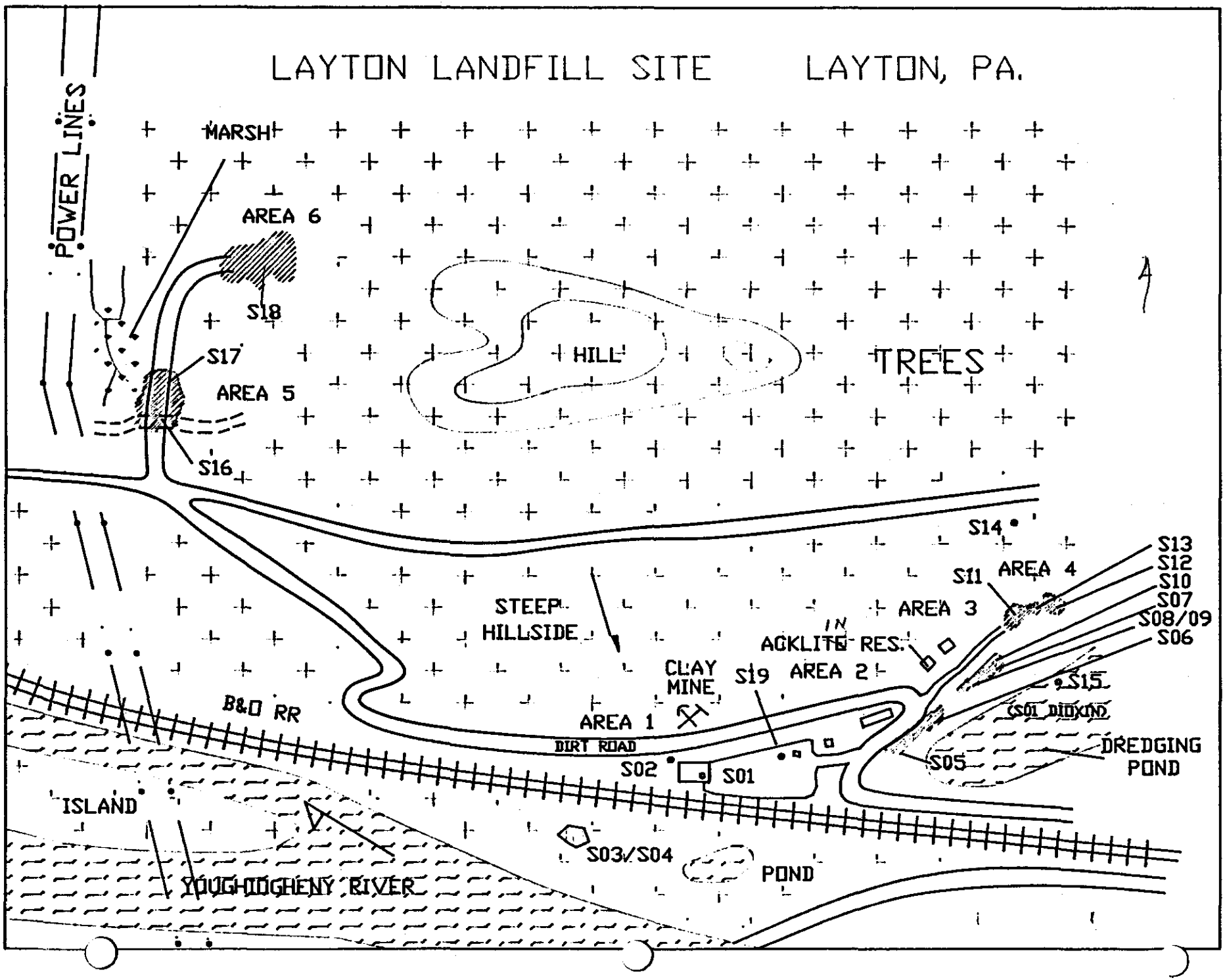
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Joseph B. Carter	11/21/89 1055				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3-4332


LAYTON LANDFILL SITE LAYTON, PA.
POWER LINES
MARSH
AREA 6
S18
S17
AREA 5
S16
HILL
TREES
S14
S13
S12
S11
AREA 4
S10
S07
AREA 3
S08/09
S06
STEEP
HILLSIDE
IN
ACKLITE RES.
CLAY
MINE
S19
AREA 2
S15
B&O RR
AREA 1
DIOXIN
DREDGING
POND
DIRT ROAD
S02
S01
S05
ISLAND
S03/S04
POND
YOUGHIOGHENY RIVER

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Layton Landfill Data Summary

TAT Assessment, 11/89

SAMPLE LOCATION	FIELD ID	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Ni (mg/kg)	Se (mg/kg)	Ag (mg/kg)	Tl (mg/kg)	Zn (mg/kg)
Soil in Building Area 1	S01	120	430.0	0.057	38.0	0.39	ND	12.0	250
Burn Area North Area 1	S02	44	9200.0	0.090	44.0	0.10	1.5	5.8	5800
Pond Sediment Area 1	S03/S04	18	11.0	0.038	6.6	0.17	ND	ND	52
Burn Area West Area 2	S05	2700	840.0	0.120	37.0	0.58	ND	4.9	770
Burn Area East Area 2	S06	11000	500.0	0.180	240.0	6.50	1.9	7.7	720
Burn Area Mid Area 3	S07	160	6000.0	0.140	130.0	5.80	2.4	3.8	3500
Burn Area East Area 3	S08/S09	570	80.0	0.270	58.0	1.30	ND	6.9	450
Burn Area West Area 3	S10	95	3200.0	0.170	370.0	1.90	2.9	7.4	6300
Copier Parts Area 4 West	S11	260	3300.0	0.038	90.0	0.49	1.6	ND	2200
Transformer Parts Area 4 East	S12	110	69.0	0.035	190.0	1.70	1.1	8.8	5600
Copier Parts Area 4 North	S13	2100	55.0	0.097	14.0	0.30	ND	ND	340
Background Soil	S14	31	17.0	0.093	9.8	0.29	ND	4.4	56
Large Pond Sediment	S15	15	5.1	0.032	8.4	ND	ND	ND	37
Burn Pile Area 5 South	S16	280	11000.0	0.095	38.0	0.28	4.0	ND	3300
Burn Pile Area 5 North	S17	160	13000.0	0.037	40.0	0.15	9.0	ND	2900
Burn Pile Area 6	S18	78	13000.0	0.038	39.0	1.10	6.5	ND	5600
Burn Area Pump House	S19	71	52.0	0.070	2.9	0.07	ND	ND	4500

NOTE: Samples S03/S04 and S08/S09 had MS and MSD.

Nomenclature:

B= Compound in Blank

J= Detected But Below Method Detection Limit

ND= Not Detected

U= Not Detected

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Layton Landfill Data Summary

TAT Assessment, 11/89

SAMPLE LOCATION	FIELD ID	PCB 1248 (mg/kg)	PCB 1254 (mg/kg)	PCB 1260 (mg/kg)	Sb (mg/kg)	As (mg/kg)	Be (mg/kg)	Cd (mg/kg)	Cr (mg/kg)
Soil in Building Area 1	S01	U	U	U	80.00	3.3	0.6	13.0	24.0
Burn Area North Area 1	S02	U	U	U	290.00	2.0	ND	41.0	94.0
Pond Sediment Area 1	S03/S04	U	U	U	0.28	1.9	ND	2.8	4.7
Burn Area West Area 2	S05	U	U	1.1	3.70	3.6	ND	18.0	14.0
Burn Area East Area 2	S06	75.8	3.40	U	36.00	4.4	ND	47.0	13.0
Burn Area Mid Area 3	S07	3.6	6.70	U	280.00	9.6	ND	61.0	47.0
Burn Area East Area 3	S08/S09	5.2	U	U	1.00	3.6	ND	50.0	12.0
Burn Area West Area 3	S10	U	0.55	U	140.00	5.0	1.1	70.0	120.0
Copier Parts Area 4 West	S11	U	U	U	99.00	3.5	ND	32.0	58.0
Transformer Parts Area 4 East	S12	U	U	U	24.00	3.6	ND	53.0	38.0
Copier Parts Area 4 North	S13	U	U	U	2.80	9.0	ND	15.0	7.2
Background Soil	S14	U	U	U	ND	4.8	ND	4.6	9.3
Large Pond Sediment	S15	U	U	U	0.34	2.4	ND	3.3	7.1
Burn Pile Area 5 South	S16	U	U	U	620.00	8.1	ND	60.0	94.0
Burn Pile Area 5 North	S17	U	U	U	1100.00	21.0	ND	49.0	73.0
Burn Pile Area 6	S18	U	U	U	210.00	1.7	ND	42.0	72.0
Burn Area Pump House	S19	U	U	U	1.30	1.2	ND	2.4	1.9

NOTE: Samples S03/S04 and S08/S09 had MS and MSD.

Nomenclature:
B= Compound in Blank
J= Detected But Below Method Detection Limit
ND= Not Detected
U= Not Detected

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Layton Landfill Data Summary

TAT Assessment, 11/89

SAMPLE LOCATION	FIELD ID	COMPOUND	RESULT	UNITS
Acklin Well	W1	PCB 1248	U	ug/L
		PCB 1254	U	ug/L
		PCB 1260	U	ug/L
		Sb	ND	mg/L
		As	ND	mg/L
		Be	ND	mg/L
		Cd	ND	mg/L
		Cr	ND	mg/L
		Cu	ND	mg/L
		Pb	ND	mg/L
		Hg	ND	mg/L
		Ni	ND	mg/L
		Se	ND	mg/L
		Ag	ND	mg/L
		Tl	ND	mg/L
		Zn	0.12	mg/L
		Methylene Chloride	5.6 B	ug/L
		Chloroform	1.1 J	ug/L
		1,1,1-Trichloroethane	2.5 J	ug/L
		Trichloroethene	2.7 J	ug/L
		Bis(2-ethylhexyl) Phthalate	3.2 BJ	ug/L
Burn Area Mid Area 3	S01	2,3,7,8-TCDF	1.1	ng/g
Burn Area Mid Area 3	S01	2,3,7,8-TCDD	0.31	ng/g
NOTE: Samples W1 and S01 had MS and MSD.				
Nomenclature:	B= Compound in Blank			
	J= Detected But Below Method Detection Limit			
	ND= Not Detected			
	U= Not Detected			

100062

WESTON SM MANAGERS DESIGNERS/CONSULTANTS
53 Haddonfield Road, Suite 306, Cherry Hill, NJ 08002
(609) 482-0222 • FAX (609) 482-6788

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

MEMORANDUM

TO: Jack L. Downie, Senior OSC, EPA Region III
Western Response Section (3HW32)

THRU: Mike Zickler, TATL, Region III MZ TDD #8910-07
PSC #2690

FROM: Marian Murphy, TAT Region III MM

SUBJECT: Layton Landfill Samples Analytical Review

DATE: January 22, 1990

This report covers the review of fifteen soil samples, two sediment samples, one water sample, and two rinsate samples collected from the Layton Landfill Site on November 21, 1989. The samples were sent to QC Inc. on November 22, 1989. The analyses requested were PCB/pesticides on everything, priority pollutant metals on the soils, sediments, water, and water rinsate, volatiles and BNAs on the water.

ANALYTICAL METHODOLOGY

The following are the EPA Methodology used; VOA 624, BNA 625, PCB/pesticides 8080, and metals 3010, 6010, and 7000. The soil and sediment samples were extracted for organics using sonication. The waters were extracted for organics using liquid/liquid techniques. All metals were extracted using acid digestion.

- Signed Chain of Custody Records were received.
- The GC/MS Tune data for the volatiles and daily calibration data were acceptable. The matrix spike recoveries and relative percent difference (RPD) values, in general, were acceptable indicating good precision and accuracy. Confidence limits for the spike compounds were calculated, but did not need to be applied.

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- The GC/MS Tune data for the BNAs and the daily calilbration data were acceptable. The matrix spike recoveries and RPD values, in general, were acceptable indicating good precision and accuracy. Confidence limits for the spike compounds were calculated, but did not need to be applied.

- The PCB/pesticide matrix spike recoveries and RPD values for the water and sediment samples were good indicating good precision and accuracy. All positive values were confirmed on a second column. The matrix spike recoveries for the soils were high. The RPD values were acceptable showing good precision but questionable accuracy. Confidence limits for the pesticides were calculated, but did not need to be applied.

- The metals matrix spike recoveries and RPD values, in general, were good. The ICP analysis had the appropriate interference checks analyzed. All furnace analyses were injected twice. Confidence limits were determined for the metals. The attached table gives the soil and sediment metals data with their respective confidence limits. No confidence limits were applied to the water.

CONCLUSION

All data are acceptable, see the attached table for the soil and sediment metals results and their associated confidence limits.

Sediment and Soil Metal Results With Associated Confidence Limits (Cont.)

(units expressed as mg/Kg)

Parameter	Sample S-05	Sample S06	Sample S07	Sample S08/S09	Sample S10
Antimony	3.7 +/- 0.5	36 +/- 5.1	280 +/- 40	1.0 +/- 0.1	140 +/- 20
Arsenic	3.6 +/- 2.4	4.4 +/- 2.9	9.6 +/- 6.3	3.6 +/- 2.4	5.0 +/- 3.3
Beryllium	ND(0.5) NC	ND(0.5) NC	ND(0.5) NC	ND(0.5) NC	ND(0.5) NA
Cadmium	18 +/- 1	47 +/- 4	61 +/- 5	50 +/- 4	70 +/- 5
Chromium	14 NA	13 NA	47 NA	12 NA	120 NA
Copper	2700 NA	11000 NA	160 NA	570 NA	95 NA
Lead	840 +/- 63	500 +/- 37	6000 +/- 450	80 +/- 6	3200 +/- 240
Mercury	0.12 NA	0.18 NA	0.14 NA	0.27 NA	0.17 NA
Nickel	37 +/- 6	240 +/- 42	130 +/- 22	58 +/- 10	370 +/- 64
Selenium	0.58 +/- 0.33	6.5 +/- 3.7	5.8 +/- 3.3	1.3 +/- 0.7	1.9 +/- 1.1
Silver	ND(0.5) NC	1.9 +/- 0.0	2.4 +/- 0.0	ND(0.5) NC	2.9 +/- 0.0
Thalluim	4.9 +/- 0.9	7.7 +/- 1.4	3.8 +/- 0.7	6.9 +/- 1.3	7.4 +/- 1.4
Zinc	770 +/- 23	720 +/- 22	3500 +/- 100	450 +/- 14	6300 +/- 190

Parameter	Sample S-15	Sample S03/S04
Antimony	0.34 +/- 0.0	0.28 +/- 0.0
Arsenic	2.4 NA	1.9 NA
Beryllium	ND(0.5) NC	ND(0.5) NC
Cadmium	3.3 +/- 0.5	2.8 +/- 0.4
Chromium	7.1 +/- 0	4.7 +/- 0
Copper	15 +/- 6	18 +/- 7
Lead	5.1 +/- 1.1	11 +/- 2
Mercury	0.032 NA	0.38 NA
Nickel	8.4 +/- 0	6.6 +/- 0
Selenium	ND(0.1) NC	0.17 +/- 0.05
Silver	ND(0.5) NC	ND(0.5) NC
Thalluim	ND(2.5) NC	ND(2.5) NC
Zinc	37 +/- 4	52 +/- 6

ND – denotes not detected, ( ) indicates detection limit.

NA – denotes not applicable, all spikes within accepted range.

NC – not calculated since sample was ND.

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Sediment and Soil Metal Results With Associated Confidence Limits (units expressed as mg/Kg)															
Parameter	Sample S11			Sample S12			Sample S13			Sample S14			Sample S16		
Antimony	99	+/-	6	24	+/-	2	2.8	+/-	0.2	ND		NA	620	+/-	40
Arsenic	3.5	+/-	1.7	3.6	+/-	1.7	9.0	+/-	4.3	4.8	+/-	2.3	8.1	+/-	3.9
Beryllium	ND(0.5)		NC	ND(0.5)		NC	ND(0.5)		NC	ND(0.5)		NC	ND(0.5)		NC
Cadmium	32	+/-	9	53	+/-	15	15	+/-	4	4.6	+/-	1.3	60	+/-	17
Chromium	58		NA	38		NA	7.2		NA	9.3		NA	94		NA
Copper	260		NA	110		NA	2100		NA	31		NA	280		NA
Lead	3300	+/-	250	69	+/-	5	55	+/-	4	17	+/-	1	11000	+/-	820
Mercury	0.038		NA	35		NA	0.097		NA	0.093		NA	0.095		NA
Nickel	90	+/-	41	190	+/-	87	14	+/-	6	9.8	+/-	4.5	38	+/-	17
Selenium	0.49	+/-	0.17	1.7	+/-	0.59	0.30	+/-	0.10	0.29	+/-	0.10	0.28	+/-	0.10
Silver	1.6	+/-	0.0	1.1	+/-	0.0	ND(0.5)		NC	ND(0.5)		NC	4	+/-	0.0
Thalluim	ND(2.5)		NC	8.8		NA	ND(2.5)		NC	4.4	+/-	0.4	ND(2.5)		NC
Zinc	2200	+/-	66	5600	+/-	170	340	+/-	10	56	+/-	2	3300	+/-	99

Parameter	Sample S17			Sample S18			Sample S19			Sample S01			Sample S02		
Antimony	1100	+/-	71	210	+/-	14	1.3	+/-	0.1	80	+/-	11	290	+/-	41
Arsenic	21	+/-	10	1.7	+/-	0.8	1.2	+/-	0.6	3.3	+/-	2.2	2	+/-	1.3
Beryllium	ND(0.5)		NC	ND(0.5)		NC	ND(0.5)		NC	0.6	+/-	0.0	ND(0.5)		NC
Cadmium	49	+/-	14	42	+/-	12	2.4	+/-	0.7	13	+/-	1	41	+/-	3
Chromium	73		NA	72		NA	1.9		NA	24		NA	94		NA
Copper	160		NA	78		NA	71		NA	120		NA	44		NA
Lead	13000	+/-	970	13000	+/-	970	52	+/-	4	430	+/-	32	9200	+/-	690
Mercury	0.037		NA	0.38		NA	0.07		NA	0.057		NA	0.09		NA
Nickel	40	+/-	18	39	+/-	18	2.9	+/-	1.3	38	+/-	7	44	+/-	8
Selenium	0.15	+/-	0.05	1.1	+/-	0.38	0.07	+/-	0.02	0.39	+/-	0.22	0.10	+/-	0.06
Silver	9.0	+/-	0.1	6.5	+/-	0.1	ND(0.5)		NC	ND(0.5)		NC	1.5		NA
Thalluim	ND(2.5)		NC	ND(2.5)		NC	ND(2.5)		NC	12	+/-	2	5.8	+/-	1.1
Zinc	2900	+/-	87	5600	+/-	170	4500	+/-	130	250	+/-	8	5800	+/-	170

ND – denotes not detected, ( ) indicates detection limit.

NA – denotes not applicable, all spikes within accepted range.

NC – not calculated since sample was ND.